The Role of System Quality and Self-Efficacy in E-Learning Users: Exploring the Determinants of Academic Achievement

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A B S T R A K

Model konseptual e-learning adalah kerangka untuk mengevaluasi kualitas sistem dan hasil pembelajaran. Hasil penilaian BAN-PT menunjukkan nilai indikator prestasi akademik dan non akademik masih rendah, hal ini menunjukkan adanya tantangan yang perlu diatasi dalam penerapan e-learning. Penelitian ini bertujuan untuk menganalisis peran kualitas sistem dan efikasi diri terhadap penggunaan e-learning dan kepuasan pengguna yang mempengaruhi kinerja akademik dengan mengembangkan D&M IS Success Model. Penelitian ini merupakan model desain survei kuantitatif eksplanatori dengan 40 item kuesioner terstruktur yang dikirimkan secara online. Sampel yang dijadikan sampel berjumlah 66 responden, diambil menggunakan metode purposive sampling dengan rumus Taro Yamane pada taraf signifikansi 10% dari populasi mahasiswa S1 Psikologi yang berjumlah 197 mahasiswa. Metode PLS-SEM digunakan dalam menganalisis hubungan variabel eksogen dan endogen secara simultan. Hasil penelitian menunjukkan bahwa nilai q square keseluruhan kontribusi variabel eksogen terhadap kinerja akademik melalui penggunaan dan kepuasan pengguna sebesar 95,4% dan variabel eksogen mempengaruhi kinerja akademik sebesar 75%. Efikasi diri berpengaruh positif dan signifikan terhadap penggunaan dan kepuasan pengguna dengan nilai t-statistik sebesar 3,761; 2,422 dan p-value 0,000; 0,016, masing-masing. Kepuasan pengguna berpengaruh positif terhadap kinerja akademik dengan nilai koefisien jalur sebesar 0,588. Evaluasi e-learning memungkinkan mengukur keberhasilan penerapan e-learning dalam mencapai peningkatan prestasi akademik.

A B S T R A C T

An e-learning conceptual model is a framework for evaluating the quality of learning systems and outcomes. The results of the BAN-PT assessment show that the values for academic and non-academic achievement indicators are still low, this indicates that there are challenges that need to be overcome in implementing e-learning. This study aims to analyze the role of system quality and self-efficacy on e-learning use and user satisfaction that affect academic performance by developing the D&M IS Success Model. The study was an explanatory quantitative survey design model with 40 structured questionnaire items sent online. 66 respondents were sampled, taken using purposive sampling method with the Taro Yamane formula at a significance level of 10% of the population of undergraduate psychology students of 197 students. PLS-SEM method was used in analyzing the connection of exogenous and endogenous variables simultaneously. The research findings show that the overall q square value of the contribution of exogenous variables to academic performance through use and user satisfaction is 95.4% and exogenous variables affect academic performance by 75%. Self-efficacy has a positive and significant effect on use and user satisfaction with t-statistic values of 3.761; 2.422 and p-values of 0.000; 0.016, respectively. User satisfaction has a positive effect on academic performance with a path coefficient value of 0.588. E-learning evaluation allows measuring the success of implementing e-learning in achieving increased academic achievement.

1. INTRODUCTION

In the context of education, the use of information technology is expected to make a significant contribution in improving student performance. E-learning as a direct result of the integration of education and technology is considered an effective learning medium anda currently, the use of e-learning systems

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has become an important thing in improving the effectiveness of the learning process (Al-Fraihat et al., 2020; Omar et al., 2020). The e-learning conceptual model is a framework used in measuring system quality and learning outcomes. This framework consists of various dimensions that are divided based on their functionality. Each dimension has its own attributes to measure e-learning outcomes (Fundeanu, 2015; Kilani, 2021). More and more higher education institutions are adopting e-learning to take advantage of the opportunities available. E-learning can provide easy access to resources and information from various places and at any time and it is important for institutions to understand the factors that influence the level of learning and academic achievement of students through the use of e-learning in order to improve teaching effectiveness and knowledge transfer through e-learning (Kapo et al., 2023).

There are several ways that are expected to be achieved through the use of information technology. First, with information technology applied in the learning process, it can improve the quality of the teaching and learning process which in turn has a positive impact on student performance. Second, the use of information technology can improve students' cognitive abilities, which in turn has a positive impact on their academic performance. Student characteristics such as cognitive ability, self-confidence, self-efficacy, motivation, perceived usefulness is known to affect learning transfer (Hasan et al., 2019; Lee & Jeon, 2020). Students are an important element in the e-learning process because they have a significant role in influencing the educational process. There are many factors that can explain students' individual characteristics, one of which is self-efficacy. Understanding the individual characteristics that influence academic achievement in the context of e-learning is a matter of concern. An extensive review of the literature on self-efficacy in e-learning shows that there are key self-efficacies required for e-learning success (Bahçekapili & Karaman, 2020; Bosica et al., 2021; Fuller et al., 2018). Self-efficacy is one of the important predictors in achieving learning success as desired by learners, this means that if learners' self-efficacy is improved, then students can achieve higher academic results. Students who have high self-efficacy do not see difficult tasks as obstacles to be avoided, but rather as opportunities to develop their skills so that this can improve the learning process and student performance and result in higher satisfaction (Alqurashi, 2019; Yokoyama, 2019). Research by previous study found that student satisfaction with e-learning has a significant relationship and is a factor that can predict students' perceived learning levels (Pérez-Pérez et al., 2019). User satisfaction in e-learning is a multidimesional construct that is influenced by various factors perceived by e-learning users. These factors include self-efficacy, interaction with instructors and classmates. Therefore, it is important to pay attention to these factors to increase user satisfaction in e-learning. The use of information technology in learning is expected to have a positive impact on the student learning process and produce good student performance.

Evaluation of individual characteristics that affect academic performance in a theoretical model can contribute to creating an effective learning environment in e-learning. As a literature review, information technology adoption theories such as information system success model (D&M IS) are used in investigating the impact of individuals in the use of e-learning (Pham & Dau, 2022; Wei & Chou, 2020). The model often used to measure the success of information systems. According to this model, system quality is the main factors that have a positive effect on user satisfaction. By paying attention to this factor, organizations can increase user satisfaction and achieve success in implementing information systems that will have an impact on individual impact. This research develops a system success model (D&M IS) with self-efficacy variables. Self-efficacy in the context of e-learning reflects students' confidence in their ability to master learning material, complete assignments, and achieve good academic achievement through the use of e-learning and plays an important role in predicting satisfaction and actual use of the e-learning system and emphasizes the importance of the learning system which has a positive impact on student performance (Bosica et al., 2021; Lai et al., 2021; Tan et al., 2020). Students who have good self-efficacy will be more motivated to be more active in using e-learning, so that the intensity of using e-learning will be higher. The increasing use of e-learning will have an impact on the level of user satisfaction so that it will have a positive influence on personal (individual impact), which means that when users feel satisfied with the e-learning experience, this can contribute positively to improving their personal abilities (Tsai et al., 2020; Yasin & Ong, 2020).

State University of Malang provides a Sistem Pengelolaan Pembelajaran (SIPEJAR) as an online learning platform. Through SIPEJAR, learning can be designed in the form of synchronous and asynchronous lectures. SIPEJAR is designed to increase self-efficacy in carrying out various learning tasks. In the learning process, students are involved in experiences facilitated by lecturers so that they can take place involving students' emotions, creativity and initiative. Apart from focusing on developing student character, learning through SIPEJAR focuses on improving academic skills (Indreswaria et al., 2019; Prestiadi et al., 2020). The implementation of SIPEJAR has not had an optimal impact on the academic achievement of Bachelor of Psychology students at the State University of Malang. The results of the BAN-PT assessment show that the values for academic and non-academic achievement indicators are still low, this indicates that there are

challenges that need to be overcome in implementing e-learning. E-learning evaluation makes it possible to measure the success of implementing e-learning in achieving increased academic achievement (Sucre-Rosales et al., 2020; Yengin et al., 2010). Based on research conducted, the use of SIPEJAR has been proven effective in improving the quality of learning and academic performance of students. Previous study highlight that positive and significant computer self-efficacy influences perceived ease of use, perceived usefulness, and attitudes towards SIPEJAR (Gebre, 2018). Thus, the aim of using SIPEJAR is to improve the quality of learning, make education more affordable, and improve the quality of learning through the Information Technology Based Interactive Skill Station Method

This study aims to analyze the extent to which system quality and self-efficacy factors affect SIPEJAR user satisfaction and the effect of SIPEJAR user satisfaction on individual impact in achieving increased academic achievement. To provide a more comprehensive understanding of the effect of SIPEJAR on individual impact, researchers developed a theoretical model of the Information Systems Success Model. The novelty of this research explores the importance of system user satisfaction not only as a direct result of system quality, and self-efficacy, but also as a moderating factor on individual impact. It is hoped that this research can provide important insights for education providers who use e-learning, so that they can implement appropriate policies to improve the quality of education.

2. METHOD

The research method is using an explanatory quantitative approach to test the proposed hypothesis. Hypotheses provide a framework for conveying research conclusions (Othman et al., 2020; Solimun et al., 2017). Research variables include exogenous variables consisting of system quality, self-efficacy and endogenous variables consisting of use, user satisfaction, and academic performance. The stages in the research start from making and testing instruments, determining samples, collecting data, and analyzing data. The research instrument is shown in Table 1.

Table 1. Research Instrument

Item	Indicator	Code
System Quality		
(Balaban et al., 2013; Chopra et al., 2019)		
SIPEJAR works well and is always available without any obstacles	Reliability	sq1.1
SIPEJAR can be easily used	Easy of use	sq2.1
Learning how to use SIPEJAR is very easy	Easy of learning	sq3.1
SIPEJAR provides various features and functions that are useful in the learning process	Features of intuitiveness	sq4.1
SIPEJAR access response does not take long	Response time	sq5.1
SIPEJAR can be utilized whenever needed	Availability	sq6.1
SIPEJAR is useful in meeting learning needs	Usability	sq7.1
All data in SIPEJAR is integrated and consistent	Integration	sq8.1
Self-Efficacy		
(Tsai et al., 2020)		
I am confident that I can complete all stages of learning in SIPEJAR smoothly		se1.1
I believe that I am able to complete all coursework contained in SIPEJAR		se1.2
I believe SIPEJAR will help me to master difficult material well	Complete learning tasks	se1.3
I believe that I am able to evaluate learning outcomes independently in the learning process through SIPEJAR		se1.4
I believe I am able to participate in discussion forums with classmates through SIPEJAR		se2.1
I am confident that I can collaborate well with classmates to complete group assignments through SIPEJAR	Interact socially with classmates	se2.2
I am confident that I can operate the features of SIPEJAR well	Handle tools in a system	se3.1
I have the opportunity to communicate with lecturers through SIPEJAR to ask questions or discuss learning materials	Interacting with instructors in learning	se4.1

Item	Indicator	Code
I am confident that I can discuss with classmates about learning materials through SIPEJAR	Interact with classmates for academic	se5.1
Use		
(Urbach & Müller, 2012)		
The use of SIPEJAR is a determining factor in the learning process	Nature of use	use1.1
I utilize SIPEJAR for my learning process	Purpose of use	use2.1
I utilize SIPEJAR to complete quizzes and assignments given		use2.2
During the learning process, I utilize all the features of SIPEJAR with easy-to-understand guidance.	Navigation patterns	use3.1
Every day, I always spend a long time accessing SIPEJAR	Daily used time	use4.1
I access SIPEJAR frequently	Frequency of use	use5.1
User Satisfaction		
(Balaban et al., 2013)		
SIPEJAR plays a role in increasing the effectiveness of the learning process	Effectiveness	us1.1
Through SIPEJAR, I can achieve my learning needs and goals as expected.	Efficiency	us2.1
With SIPEJAR, learning becomes more interesting and fun	Interesting	us3.1
SIPEJAR provides significant benefits in the learning process	Usefulness	us4.1
I feel satisfied with the performance of SIPEJAR	System performance	us5.1
I enjoy using SIPEJAR in the learning process	Enjoyable experience	us6.1
SIPEJAR meets my educational needs	Providing educational needs	us7.1
Overall, I am satisfied with learning through SIPEJAR	Overall satisfaction	us8.1
Academic performance		
(Al-Adwan et al., 2021; DeLone & McLean, 1992).		
My knowledge improvement is helped through learning using SIPEJAR	Increasing knowledge	ap1.1
SIPEJAR is a very effective learning tool in improving the learning process	Improving learning process	ap2.1
SIPEJAR helps in achieving learning objectives by providing the right support		ap3.1
I feel helped in improving my academic performance through SIPEJAR	Achieving learning goals	ap3.2
SIPEJAR allows me to complete assignments more efficiently.	Task performance	ap4.1
SIPEJAR makes it easy to complete assignments		ap4.2
I feel helped i increasing creativity and innovation through SIPEJAR	Task Innovation	ap5.1
SIPEJAR provides great benefits and greatly supports my learning process		ap6.1
SIPEJAR makes a significant contribution in improving understanding of learning materials that are difficult to understand	Usefullness	ap6.2

Instrument consisting of forty question items with a rating scale using a Likert scale of one to four. Data collection was carried out in early November 2023, 66 respondents were sampled, taken using purposive sampling method which is a sampling technique based on certain criteria at a significance level of 10% of the population of undergraduate psychology students in the 2020 academic year of 197 students. The frequency of the number of male students was 25 people or 38% and female students were 41 people or 68%. The class of 2020 students were selected as samples because they had more than one year of experience using SIPEJAR.

Data analysis with Smart PLS software is used in running PLS-SEM. The PLS-SEM method is a good method in analyzing the connection of exogenous and endogenous variables simultaneously (Ghozali & Latan, 2015). The first stage includes testing the measurement model (outer model) to assess the validity and reliability of the model which is evaluated through convergent and discriminant validity tests as well as reliability tests (composite reliability and Cronbach's alpha). The convergent validity test can be seen from the loading factor value for each construct indicator which must be more than 0.6 and the average

variance extracted (AVE) value must be greater than 0.5, while the discriminant validity test can be seen from the cross loading value for each variable which must be more than 0.7 and the square root value of average variance extracted (AVE) is greater than the correlation between constructs measured in the model (Solimun et al., 2017). Reliability measurements are carried out using composite reliability to determine the actual reliability value, while Cronbach's alpha is used to measure the minimum reliability of a construct with the second value having to be > 0.7. The second stage involves testing the structural model (inner model) assessed using R-square for the dependent construct, p-values or t-values of each path to test the significance between constructs in the structural model. The research design is shown in Figure 1.
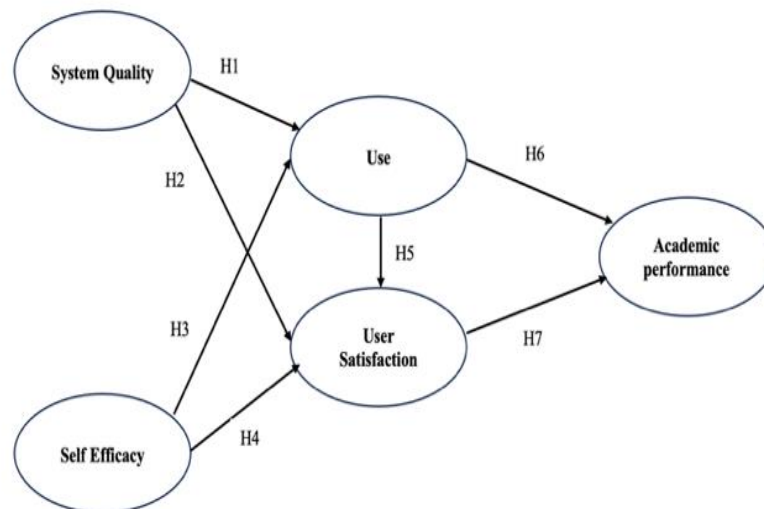

Figure 1. Research Design

The quality of e-learning systems should be assessed based on the system's ability to be easily used and offer all necessary features. In the context of educational systems, the pedagogical functionality is an important feature that enables users to effectively utilize the system and connect well for teaching and learning activities (Nuryanti et al., 2018; Sukajie et al., 2019). There is a strong relationship between system quality and user satisfaction and system usage. System features such as accessibility, interactivity, and user-friendliness can enhance system usage and result in higher user satisfaction (Efiloğlu Kurt, 2019; Ithriah et al., 2020). In the context of learning systems, the quality of e-learning systems has a significant influence on user satisfaction (Salam & Farooq, 2020). The more user-friendly and structured an e-learning system is, the better the system quality. It is important to ensure good system quality to influence user satisfaction in using the e-learning system. These results indicate that systems that have high quality, such as reliability, ease of use, and good functionality, can improve user performance and productivity, thereby increasing their level of satisfaction. Improving system quality has a positive and significant effect on the level of user satisfaction with information systems and the effective use of information system technology (Cheng, 2019; Khairrunnisa & Yunanto, 2018; Rahayu et al., 2018).

3. RESULT AND DISCUSSION

Result

A two-stage approach was used in data analysis. The first stage involves evaluating the measurement model which includes testing convergent validity, discriminant validity, reliability. Reliability measurement is done with composite reliability to measure the true reliability level of a construct, and Cronbach's alpha to measure the reliability level of a construct. Convergent validity can be seen from the loading factor value of each indicator> 0.6 and Average Variance Extracted (AVE)> 0.5. Discriminant validity is assessed based on the value of cross loading with latent variables must be greater than the correlation with other latent variables. The values of the Convergent validity test results are show in Table 2 and Table 3.

Table 2. Convergent & Discriminant validity

Item	Loading factor	SQ	SE	Use	US	AP	Information
sq1.1	0.632	0.632	0.389	0.320	0.417	0.329	Valid
sq2.1	0.838	0.838	0.512	0.492	0.635	0.515	Valid
sq3.1	0.810	0.810	0.464	0.437	0.509	0.434	Valid
sq4.1	0.760	0.760	0.475	0.233	0.485	0.333	Valid
sq5.1	0.669	0.669	0.235	0.059	0.352	0.161	Valid
sq6.1	0.702	0.702	0.317	0.344	0.489	0.364	Valid
sq7.1	0.763	0.763	0.476	0.247	0.487	0.417	Valid
sq8.1	0.673	0.673	0.438	0.206	0.355	0.291	Valid
se1.1	0.700	0.646	0.700	0.318	0.570	0.523	Valid
se1.2	0.615	0.473	0.615	0.275	0.386	0.339	Valid
se1.3	0.773	0.447	0.773	0.576	0.535	0.511	Valid
se1.4	0.763	0.462	0.763	0.412	0.570	0.515	Valid
se2.1	0.685	0.348	0.685	0.394	0.447	0.405	Valid
se2.2	0.699	0.229	0.699	0.489	0.434	0.533	Valid
se3.1	0.618	0.351	0.618	0.351	0.464	0.496	Valid
se4.1	0.766	0.436	0.766	0.415	0.573	0.465	Valid
se5.1	0.835	0.377	0.835	0.559	0.658	0.591	Valid
use1.1	0.679	0.353	0.481	0.679	0.578	0.567	Valid
use2.1	0.730	0.385	0.415	0.730	0.608	0.538	Valid
use2.2	0.740	0.213	0.383	0.740	0.406	0.553	Valid
use3.1	0.758	0.270	0.406	0.758	0.393	0.522	Valid
use4.1	0.709	0.271	0.508	0.709	0.488	0.561	Valid
use5.1	0.834	0.403	0.454	0.834	0.664	0.643	Valid
us1.1	0.755	0.476	0.507	0.647	0.755	0.616	Valid
us2.1	0.820	0.530	0.661	0.593	0.820	0.697	Valid
us3.1	0.646	0.297	0.590	0.480	0.646	0.615	Valid
us4.1	0.691	0.486	0.588	0.456	0.691	0.586	Valid
us5.1	0.678	0.478	0.364	0.475	0.678	0.573	Valid
us6.1	0.771	0.562	0.550	0.457	0.771	0.574	Valid
us7.1	0.791	0.546	0.552	0.564	0.791	0.622	Valid
us8.1	0.790	0.510	0.484	0.581	0.790	0.668	Valid
ap1.1	0.692	0.328	0.393	0.453	0.629	0.692	Valid
ap2.1	0.715	0.412	0.602	0.658	0.698	0.715	Valid
ap3.1	0.721	0.253	0.472	0.623	0.583	0.721	Valid
ap3.2	0.787	0.439	0.512	0.589	0.605	0.787	Valid
ap4.1	0.752	0.204	0.336	0.578	0.504	0.752	Valid
ap4.2	0.757	0.262	0.462	0.664	0.480	0.757	Valid
ap5.1	0.773	0.249	0.536	0.588	0.647	0.773	Valid
ap6.1	0.713	0.591	0.572	0.457	0.685	0.713	Valid
ap6.2	0.634	0.604	0.545	0.349	0.590	0.634	Valid

Table 3. Average Variance Extracted (AVE)

Variable	AVE	Information
System Quality	0.539	Valid
Self-Efficacy	0.519	Valid
Use	0.553	Valid
User Satisfaction	0.555	Valid
Academic Performance	0.531	Valid

Base on Table 2 and Table 3, discriminant validity which shows the value of each indicator and variable meets these criteria so that all indicators and variables are declared valid. Rule of thumb for composite reliability and Cronbach's alpha > 0.7. The value of composite reliability and Cronbach's alpha for each variable in this study is> 0.7 so that all variables are declared reliable and the analysis results are presented in Table 4.

Table 4. Reliability Test

Variable	Cronbach's Alpha	Information	Composite Reliability	Information
System Quality	0.878	Reliable	0.903	Reliable
Self-Efficacy	0.883	Reliable	0.906	Reliable
Use	0.837	Reliable	0.881	Reliable
User Satisfaction	0.884	Reliable	0.908	Reliable
Academic Performance	0.889	Reliable	0.910	Reliable

Base on Table 4, the second stage involves evaluating the structural model which is assessed using R-square for the dependent construct, p-values or t-statistics of each path to test the significance between constructs in the structural model. Hypothesis testing steps can be seen from the t-statistic value and p-values. If the t-statistic value> 1.96 and the p-value ≤ 0.05 then the research has a positive and significant effect, but if the t-statistic value and p-value do not meet these criteria then there is no positive and significant effect. The analysis results of path coefficient is show in Table 5.

Table 5. Path Coefficient

Exogen Variable	Endogen Variable	Path Coefficient	T-Statistics	P-Values	Information
System Quality	Use	0.135	0.850	0.396	(+) Not significant
System Quality	User Satisfaction	0.301	2.853	0.005	(+) Significant
Self Efficacy	Use	0.519	3.761	0.000	(+) Significant
Self Efficacy	User Satisfaction	0.311	2.422	0.016	(+) Significant
Use	User Satisfaction	0.401	4.704	0.000	(+) Significant
Use	Academic Performance	0.341	2.774	0.006	(+) Significant

Base on Table 5 show that H1 is rejected (t-statistic value 0.850; p-value 0.396) which means that system quality does not affect use, but system quality has a positive and significant effect on user satisfaction (t-statistic value 2.853; p-value 0.005) so that H2 is accepted. The self-efficacy variable has a positive and significant effect on use and user satisfaction with a t-statistic value of 3.761; 2.422 and a p-value of 0.000; 0.016 so that H3 and H4 are accepted. Use has a positive and significant effect on user satisfaction and academic performance (H5 and H6 accepted) with a t-statistic value of 4.704; 2.744 and a p-value of 0.000; 0.006. H7 is accepted, this is based on the results of the analysis of variables that have a significant effect on academic performance, showing a t-statistic value of 5.469 and a p-value of 0.000. Based on the seven hypotheses proposed, six of them have a positive and significant effect so that the hypothesis is accepted H2, H3, H4, H5, H6 and H7 but there is one hypothesis, namely H1, which is rejected because it does not have a significant effect with the t-statistic value and p-value not meeting the criteria. The result of R-square is show in Table 6.

Table 6. R-Square

Variable	R -Square	Q-Square
Use	0.369	0.954
User Satisfaction	0.710	
Academic Performance	0.750	

Table 6 shows the R-square data used to measure the contribution of exogenous variables to endogenous variables with a use value of 0.369, user satisfaction of 0.710, and academic performance of 0.750. Based on this value, it can be explained that the use variable is 36.9% influenced by the system quality and self-efficacy variables, while 63.1% is influenced by exogenous variables not included in the study. The user satisfaction variable is 71% influenced by the system quality and self-efficacy variables, while 29% is influenced by exogenous variables not included in the study, and the system quality and self-efficacy variables affect academic performance by 75%, while 25% is influenced by other variables not included in this study. The user satisfaction and academic performance variables have a strong R-square value, while the use variable has a moderate R-square. The PLS-SEM result is show in Figure 2.
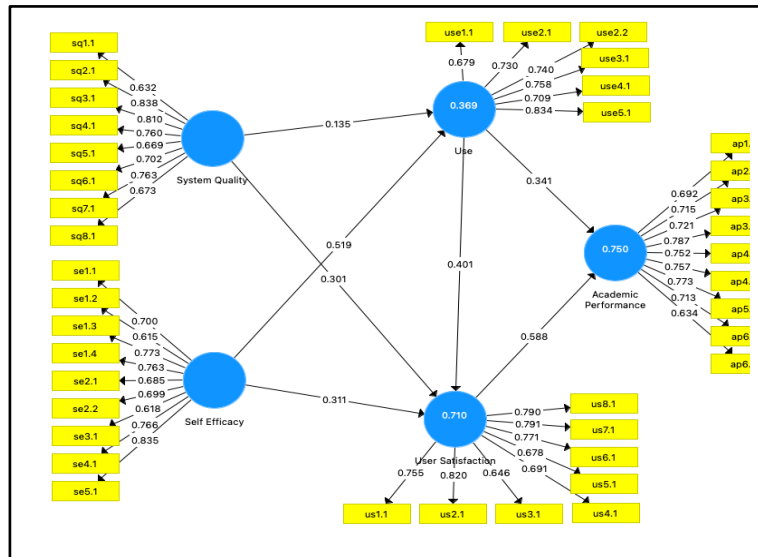
Figure 2. PLS-SEM Result

As shown in Figure 2 the results of data analysis from SEM PLS on each variable. In the system quality (SQ) variable, item sq2.1 is the dominant indicator in measuring system quality (SQ) by 83.8%. Item se5.1 on the self-efficacy (SE) variable is the dominant indicator with a contribution of 83.5%. The dominant indicators in the use, user satisfaction (US), and academic performance (AP) variables are use5.1 at 83.4%, us2.1 at 82% and ap3.1 at 78.7%, respectively.

Discussion

In the analysis results, system quality has no effect on use. This finding is compatible with similar findings (Al-Fraihat et al., 2020; Salam & Farooq, 2020). This shows that users continue to use existing e-learning regardless of system quality. The insignificant relationship between system quality and use indicates that use does not depend on system quality, this is contrary to the results of previous studies which state that good system quality can encourage users to use the system (Al-Mamary, 2019; Çelik & Ayaz, 2022; Dalle et al., 2020). There are several possible reasons for the absence of influence between these variables, one of which is that the use of SIPEJAR is mandatory for students, so that even though the system quality is of poor quality, students will still use SIPEJAR in learning. On the other hand, one possible reason is that the level of system quality is not sufficient to influence students in using SIPEJAR, including SIPEJAR has not been able to fulfill the factors that can increase system usage, including SIPEJAR functioning properly without obstacles, fast response, and consistently integrated (reliability, response time, and integration). In addition, the insignificant relationship may be aspects of the quality system that are less important in using SIPEJAR. System quality has a positive and significant influence on user satisfaction.

This finding supports the D&M IS Success Model which states that system quality is one dimension in measuring the success of information systems. One of the features that allegedly provides a positive perception of system quality is the easy use of the system (At-tamimi & Siregar, 2021; Nugraheni & Bayastura, 2021; Ramírez-Correa et al., 2018). Considering user experience and needs in the design will increase understanding of the system and make it easier for users to interact. Intuitive and clear navigation can help users find the features they need easily. These results are consistent with the findings of similar studies (Nani & Lina, 2022; Satyadarma & Syamsudin, 2023; Suryanto et al., 2023). The results of previous research indicate that system quality has an effect on increasing user satisfaction, if users consider system quality good, they tend to feel satisfied in using the system and achieve the expected results.

The results of self-efficacy research have a positive and significant effect on use. Factors such as belief in the ability to complete learning in SIPEJAR, completing coursework through SIPEJAR, as well as communicating and discussing learning material can influence students in using SIPEJAR. These results are relevant to previous research (Hermanto et al., 2019; Uddin et al., 2019), that the greater the student's self-efficacy in utilizing e-learning, the higher the level of use. Self-efficacy has a positive and significant effect on user satisfaction, this result is in line with the research state students who have high self-efficacy will increase satisfaction (Al-Rahmi et al., 2018; Um & Jang, 2021). They have high self-confidence in using e-learning is likely to be easier in completing tasks in e-learning. Based on the findings of the indicator interact with classmates for academic has a dominant value in measuring self-efficacy. Students feel confident

discussing learning materials through SIPEJAR, this can increase their trust and satisfaction with the experience of using SIPEJAR.

Use has a positive and significant effect on user satisfaction. The use of SIPEJAR is a determining factor in the learning process, students can use it to complete assignments with guidance on SIPEJAR features that are easy to understand. This has a positive impact on students feeling that SIPEJAR plays an effective role in the learning process and meets their needs. A good SIPEJAR usage experience can increase user satisfaction. These results are in line with the findings of (Cidral et al., 2020; Khand & Kalhoro, 2020), but these results contradict the findings by study which state that use has no effect on user satisfaction (Dalle et al., 2020). Use has a positive and significant effect on academic performance. The more students increase the frequency and duration of use of SIPEJAR can improve their performance in acquiring knowledge. SIPEJAR as an effective learning tool is able to provide an understanding of material that is difficult to understand which can affect the improvement of academic performance. This finding is in line with study state that the use of e-learning as a learning tool is able to fulfill student learning needs and plays a role in achieving the desired learning outcomes (Al-Adwan et al., 2021).

User satisfaction has a positive and significant effect on academic performance. SIPEJAR can fulfill educational needs and provide significant benefits in learning, this has an impact on increasing student knowledge and providing the right support in achieving learning goals (Hayashi et al., 2018; Rahmawati, 2019). If students are satisfied with the learning experience, they tend to have a positive attitude towards the lessons presented by SIPEJAR, which in turn increases their academic achievement. This result is relevant to the research state when students are satisfied with the e-learning system, they will make good use of it so that it can improve their performance (Maqableh et al., 2021; Rokhman et al., 2022).

Based on the research findings, it is possible to identify the factors that influence the quality of e-learning, which can serve as a reference for development and provide feedback to enhance the efficiency and effectiveness of e-learning implementation to help achieve students' academic performance. This study can provide recommendations for improving processes or strategies to enhance the quality of e-learning as an effort to improve students' academic achievements. For future research, it is recommended to expand the sample scope to better represent the population. Additionally, future research could utilize different methods or combine several methods to gain a more comprehensive understanding of the phenomenon under investigation. Furthermore, future research could delve deeper into the factors influencing this topic using a more qualitative approach.

4. CONCLUSION

System quality and self-efficacy have a significant influence on user satisfaction. Self-efficacy on all stages of learning and task completion has an influential factor on the use of SIPEJAR. A good SIPEJAR usage experience can increase students' perceptions that SIPEJAR is able to meet their needs so that they will feel satisfied. The use and satisfaction of SIPEJAR has a positive influence on students' attitudes in the learning process and their productivity which has an impact on achieving academic performance. The findings of this study will make a valuable contribution to SIPEJAR developers in creating effective strategies to enhance the student learning experience and encourage the achievement of optimal learning outcomes. Therefore, maintaining and improving the quality of the system on an ongoing basis is very important. The limitation of this study is that the respondents are students of the Faculty of Psychology, State University of Malang in the 2020 academic year as SIPEJAR users, so this study only covers one faculty. Therefore, the model used can be tested at other faculties and universities so that the research results can be generalized.

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